Amendments to the Specification:

Please replace the paragraphs at page 1, line 11 through page 2, line 9 with the following amended paragraphs:

This invention relates to the manner of generating, controlling, and distributing electrical power from an electrical generator driven by an internal combustion engine. The generated electrical power is used to power computer-controlled electric motors used as the traction drive in multipurpose lightweight vehicles and equipment such as mowers, and to provide power to on-board [[mower]] attachments and external electrical equipment.

Lightweight vehicles [[mowers]] exist today in numerous configurations and are purposefully built to meet the application needs related to the industry in which they are used. Typical examples of these vehicles [[mowers]] are: Ride on Lawn Mowers; Yard and Garden Tractors; Snow Blowers; Golf Carts and Utility Carts; Traffic/Parking Police Scooters; Postal Delivery Vehicles; Airport People Movers; Airport Tarmac Shuttle Vehicles; Disabled-Person Movers; Hybrid Electric Vehicles; Go-carts; and All-Terrain Vehicles. These vehicles require a power source that is typically directly or indirectly mechanically linked to the drive wheels for traction and some vehicles are provided with a mechanical connection for powering onboard attachments and externally attached devices. Drive power trains typically have used drive axles, chain/sprocket drives, manual gear-selection transmissions, hydrostatic transmissions, differential gears, etc. in varying combinations. Steering and speed control techniques vary between the different types of vehicles. Most of the vehicles use a mechanical differential in the drive train to balance the torque applied to the driven wheels so that the wheels can rotate at different speeds when they are required to make a turn.

Please replace the paragraph at page 4, lines 2 through 20, with the following amended paragraph:

The present invention is directed towards a drive system, which integrates an electric generator; one or more electric motors and an electronic control module as a variable speed drive

in either single, dual or four-wheeled traction drive configurations for a lightweight vehicle such as a mower. The generator is mechanically driven by the output shaft of an internal combustion engine to generate the electrical power for energizing the electric motors. A central computer in the electronic control module controls the output voltage of the generator and the speed and torque of each of the motors in the drive system. The speed input signal for the motors can be analog signals that come from sources such as a joystick, a potentiometer mounted on a steering wheel, control panel, foot pedal or remote location or digital signals from a digital device. Position/speed detectors on each motor and in some configurations the generator send signals back to the central computer for closed-loop control of the generator and of the motors. The generator supplies the DC voltage to the power control board for each motor as commanded by the central computer. The rotor of each motor is connected to a gearbox for speed reduction and increased torque that is applied to the wheel mounted on the output shaft of the gearbox. When the motors are not being driven, the generator may optionally supply DC power to the input of an electrical inverter that has an output to standard electric utility AC outlets that can be used to power auxiliary equipment.

Please replace the paragraph at page 6, lines 1 through 8, with the following amended paragraph:

An inverter module can optionally be connected to the output of the generator to provide AC power for auxiliary equipment. The filtered DC input power from the generator is chopped by a semiconductor H-bridge. The switching in the H-bridge is controlled by the central computer board. The chopped AC output of the H-bridge passes through a low-pass filter to provide two synchronous 110/120 V AC, 50/60 Hz sinewave outputs that are 180 degrees out of phase. The outputs are combined to provide 120V AC and 240V AC outputs to standard AC outlets. As a safety feature, the inverter output may be inhibited when the vehicle [[mower]] is moving.

Please replace the paragraph at page 6, lines 17 through 21, with the following amended paragraph:

The preferred embodiment gearbox contains parallel shaft spur gears to provide a 30:1 speed reduction, although different gearing types and reductions may be used for different embodiments. The output shaft of the gearbox is the drive axle for its driven wheel on the vehicle [[mower]] . Torque is increased in the drive axle by the gear ratio in the gearbox.

Please replace the paragraphs at page 8, lines 5 through 19, with the following amended paragraphs:

The drive configuration with its control scheme in this invention performs the functions of a mechanical differential through a torque (current) control algorithm that is embedded in the software for the central computer. The torque (current) control algorithm balances the torque and changes the speeds of the driven wheels so that the vehicle [[mower]] can make a turn in the same manner that a mechanical differential would allow as defined by the formula:

Speed input to differential = Speed left wheel + Speed right wheel

The motors under most operational conditions will require power from the generator and power control board but when the vehicle [[mower]] is traveling down an incline or decelerating, the motors will regenerate energy back through the power control board and the generator into the source, an internal combustion engine, or other means, which will slow down the vehicle [[mower]]. This regenerative braking is desirable to slow down or stop the vehicle [[mower]] over a reasonable distance.

Please replace the paragraph at page 9, lines 3 through 8, with the following amended paragraph:

In this invention, the drive can be configured as an integral assembly as mentioned above or the generator and motor/gearbox wheel units can be mounted on the vehicle [[mower]] separately with electrical power harnesses and signal harnesses run separately between the components in the drive system over the vehicle [[mower]] chassis. A motor circuit controlled by the central computer is required for each motor. One, two, and four-wheel drive configurations can be built in this manner.

Please replace the paragraph at page 9, lines 11 through 13, with the following amended paragraph:

Fig. 1 is a schematic view of a four-wheel vehicle [[mower]] that has a generator driven by an internal combustion engine and a single motor driving a reducer/mechanical differential.

Please replace the paragraphs at page 10, lines 1 through 9, with the following amended paragraphs:

Fig. 4 is a schematic view of a three-wheel vehicle [[mower]] that embodies the invention in the drive system configured to drive two wheels with the third wheel mounted in a swiveling stirrup attached mechanically to the frame of the vehicle [[mower]] as a caster.

Fig. 5 is a schematic view of a four-wheel vehicle [[mower]] that embodies the invention with a motor/gearbox on each of two wheels and two non-driven wheels mounted in swiveling stirrups attached mechanically to the vehicle [[mower]] frame as casters.

Fig. 6 is a schematic view of a three-wheel vehicle [[mower]] that embodies the invention with a motor/gearbox mounted on the wheel that is mechanically linked to the operator's steering wheel.

Please replace the paragraph at page 10, lines 16 through 21, with the following amended paragraph:

Figure 1 shows a drive system **10** for a four-wheeled vehicle [[mower]] **12** with conventional steering **14**. The drive system **10** includes an electric generator **16** which is driven by an internal combustion engine **18** and a motor **20** mounted to a gearbox **22** and standard mechanical differential **24** which drives the individual axles **26, 28** of the two rear wheels **30, 32**. This configuration allows the engine **18** to operate continuously at its most efficient speed and eliminates the need for a transmission.

Please replace the paragraphs at page 13, line 6 through page 15, line 12, with the following amended paragraphs:

The vehicle ~~tractor mower~~ **12** in Figure 3 includes the drive system **10** of Figures 2A and 2B to drive the two rear wheels **30, 32**. The two non-driven wheels **31, 33** are used for steering. The internal combustion engine **18** can be operated continually at its torque-efficient speed because the speed of the vehicle ~~tractor mower~~ **12** will be independently electronically controlled through the generator **16**, power control module and the motors **20, 21** driving the two rear wheels **30, 32**. The speed is controlled by either an analog or digital signal from a device operated by the vehicle [[mower]] operator. The device can be an analog potentiometer mounted on a foot pedal, a control panel, steering wheel or other convenient location. A rotary digital encoder **46**, sometimes referred to as a digital potentiometer, can be mounted in one of the same locations and supply a digital signal to the speed control input of the central computer **44** in the power control module. The speed does not change suddenly but is ramped up to the speed set by the operator. The speed changes for each of the driven wheels **30, 32** when the vehicle ~~tractor~~

~~mower~~ **12** makes a turn, or when one of the driven wheels **30, 32** loses traction, are made by the torque (current) control algorithm embedded in the central computer **44**. The vehicle ~~tractor mower~~ **12** can be driven in reverse after the operator has selected the reverse direction with a forward/reverse switch.

The motors **20, 21** in the drive system **10** for the vehicle ~~tractor mower~~ **12** in Figure 3 will regenerate electrical energy when the vehicle ~~tractor mower~~ **12** attempts to go faster than the set speed down an inclined surface. The regenerated energy will flow from the motors **20, 21** back through their respective motor circuits **38** and the generator **16** to the internal combustion engine **18** which will slow down. Optionally, the regenerated energy can be stored in the vehicle ~~tractor~~ battery (not shown) or dissipated in resistors for braking. As shown, the 110/120V AC and 12V DC outlets are optional for this configuration. Mechanical brakes, as well known in the prior art, may be used on any of these embodiments to provide for additional braking capabilities.

In Figure 4, the three-wheel vehicle [[mower]] **12** uses the drive system **10** to drive the two driven wheels **30, 32** independently. The third wheel **50** located on the opposite end of the vehicle [[mower]] **12** is mounted as a caster in a swiveling stirrup **52** attached to the vehicle [[mower]] **12** frame. The speed and steering are controlled through the two motors **20, 21**. The two driven wheels **30, 32** can be on either the front or back of the vehicle [[mower]] **12**.

The motors **20, 21** on the two wheels **30, 32** are controlled through the computer and appropriate motor circuit **38** for independent control of the speed, steering and direction. The central computer **44** will receive a speed input from a control **45**, such as a joystick, an analog potentiometer or digital encoder mounted on a foot pedal or other location. If a joystick is used, it can also send the steering, speed, and directional input signals to the central computer **44.** The use of a speed-control foot pedal requires separate control devices for steering and direction. A rotary digital encoder with quadrature output can provide a steering and speed signal and a forward/reverse switch can provide a directional signal to the central computer **44**. To control the speeds and directions of the wheels **30, 32**, the central computer **44** sends command signals separately to a microprocessor-based motor controller circuit **38** for each motor **20, 21**. The motor controller circuit **38** on each wheel **30, 32** controls its respective circuit output to its motor **20, 21** independently of the controller **38** for the other motor **20, 21**. The wheels **30, 32**, in making a turn, can travel at different speeds required to make the turn. One wheel **30, 32** can be driven in reverse as the other wheel **30, 32** is driven forward to make a zero radius turn when the

forward speed is zero. The third wheel **50** in the stirrup **52** will swivel to allow the vehicle [[mower]] **12** to move in the direction determined by the speeds and direction of the driven wheels **30, 32**. The differential steering control through a torque (current) control algorithm is not used in this vehicle [[mower]] **12**.

Please replace the paragraphs at page 15, line 17 through page 16, line 10, with the following amended paragraphs:

The vehicle [[mower]] **12** in Figure 5 is a four-wheel vehicle [[mower]] **12** similar to the vehicle [[mower]] **12** in Figure 4. The only difference is the second non-driven wheel **51**. The drive system **10** is configured and functions the same way as the three-wheel drive of Figure 4. Both non-driven wheels **50, 51** swivel in their stirrups **52** to allow the vehicle [[mower]] **12** to move in the direction determined by the speed and direction of the driven wheels **30, 32.**

In Figure 6, a three-wheel vehicle [[mower]] **12** has only one driven wheel **30**. This embodiment of the invention has the internal combustion engine **18** driving the generator **16** as previously described. The motor **20** and gearbox **22** are mounted on the one swiveling wheel **30** that is used for steering the vehicle [[mower]] **12**. The other two wheels **50, 51** are non-driven and follow at the speed and in the direction determined by the driven wheel **30**. The speed control signal to the central computer **44** can be supplied by one of the controls **45**, including an analog potentiometer or digital encoder mounted on a foot pedal or on another location that is actuated by the vehicle [[mower]] **12** operator. Steering is accomplished by the steering wheel **46** that is mechanically to linked to the driven wheel **30**.

Please replace the paragraph at page 18, line 19 through page 19, line 4, with the following amended paragraph:

The drive configuration with its control scheme in this invention performs the functions of a mechanical differential through a torque (current) control algorithm that is embedded in the

software for the central computer. The torque (current) control algorithm balances the torque and changes the speeds of the driven wheels so that the <u>vehicle</u> [[mower]] can make a turn in the same manner that a mechanical differential would allow as defined by the formula:

Speed input to differential = Speed left wheel + Speed right wheel

Please replace the paragraphs at page 20, line 18 through page 22, line 3, with the following amended paragraphs:

A wheel that loses traction will cause its driving motor **20, 21** to need less torque and consequently will draw less current from the motor circuit **38**. When the drop in current to the motor **20, 21** is detected, the central computer **44** starts the torque control algorithm to reduce the current to both motors **20, 21** to lower the torque until both motors **20, 21** have the same torque and the speed of the motor **20, 21** that lost traction is increased and the speed of the other motor **20, 21** is decreased so that the average of the speeds of the two motors **20, 21** always equals the set speed. The software in the central computer **44** will always attempt to keep the torque of each motor **20, 21** equal to the torque of the other motor **20, 21** by keeping the currents equal. Also, the central computer **44** will control the speeds of the two motors **20, 21** so that the average of the speeds always equals the set speed. When the <u>vehicle</u> [[mower]] **12** is making a turn, the wheel on the outside of the turn will increase in speed and the inside wheel will decrease in speed so that the average speed is equal to the set speed with the torque to each wheel being equal.

An optional method of controlling the acceleration and deceleration of the <u>vehicle</u> [[mower]] can be implemented with acceleration/deceleration curve data in a table stored in the central computer. The acceleration of the <u>vehicle</u> [[mower]] will follow the curve programmed into the table to the set speed in a predetermined amount of time. Any change in running speed, increase or decrease, will be controlled by the values in the table. Different rates of change can exist for acceleration and deceleration in the forward direction. The acceleration and deceleration in the reverse direction can also have different rates of change.

The speed of the <u>vehicle</u> [[mower]] can be reduced as it is being steered into a curve so that

the vehicle [[mower]] does not tip over. The speed is coordinated with a steering signal from an encoder on the steering wheel or other steering device. All movements of the vehicle [[mower]] can be made in a safe manner either by limiting the speed of the outer wheel or by the speed being coordinated with the steering signal.

Other speed control modules may be added to improve the safe operation of the vehicle [[mower]] under different conditions. These conditions include the traveling of the vehicle [[mower]] at an acute angle to the horizon.

Please replace the paragraphs at page 22, line 7 through page 23, line 11, with the following amended paragraphs:

The optional method of controlling the acceleration and deceleration of the vehicle [[mower]] can be implemented with a control table stored in the on-board memory of the microprocessor in the central computer. The acceleration of the vehicle [[mower]] will follow the curve programmed into the table to the set speed in a predetermined amount of time. The maximum time will occur when the vehicle [[mower]] is going from a standstill to maximum speed. Any change in running speed, increase or decrease, will be controlled by the values in the table. Different rates of change can exist for acceleration and deceleration in the forward direction. The acceleration and deceleration in the reverse direction can also have different rates of change.

This control method can be used to reduce the speed of the vehicle [[mower]] when it is being steered into a curve so that the vehicle [[mower]] does not tip over as it travels through a sharp turning radius. All movements of the vehicle [[mower]] can be made in a safe manner either by limiting the speed of the outer wheel or by coordinating the speed with a steering signal from an encoder on the steering wheel or other device.

Other speed control modules may be added to improve the safe operation of the vehicle [[mower]] under different operating conditions, e.g., the traveling of the vehicle [[mower]] at an acute angle to the horizon.

Positive traction can be implemented by simulating a locked differential by keeping the speed of the two wheels equal at all times regardless of the loss of traction by either wheel. This mode can be selected by a switch, located on a control panel or other location on the vehicle [[mower]] **12**, that inputs a signal to the central computer **44** to bypass the torque control algorithm. Also, it can be limited to low speeds by detection of speeds lower than a given speed set-point and then bypassing the torque control algorithm until the speed is increased above the set-point. The locked differential can only be used on wheels that are not involved in the steering of the vehicle [[mower]] **12**.

Please replace the paragraph at page 26, lines 9 through 22, with the following amended paragraph:

The schematic representation shown in Figure 9 provides an overview of the implementation of the option for converting the output of the generator **16** to commercial AC voltages for powering auxiliary equipment, e.g., weed-eaters and chainsaws. The filtered DC output of the generator **16** is applied to the input inverter circuit **56** where it is chopped by a semiconductor H-bridge **58**. The switching in the H-bridge **58** is controlled by the central computer **44** board. The synchronized switching signals from the central computer **44** drive the control inputs of the H-bridge **58**. The chopped voltage output is passed through a low-pass filter **60** to provide two synchronous 120 VAC, 60 Hz sine wave outputs that are 180 degrees out of phase. Standard AC outlets **62** are connected to these two outputs in combinations to provide 120V AC and 240V AC for external use from the vehicle [[mower]] **12**. As a safety feature, the inverter outputs **62** are inhibited by a signal from the switch **63** on the vehicle [[mower]] **12** brake so that the outputs are not available when the brake is off and the vehicle [[mower]] **12** is moving.

Please replace the Abstract at page 38 with the following amended abstract:

A drive system which integrates an electric generator, one or more electric motors and an electronic control module is configured as a variable speed drive in either single, dual or four wheeled traction drive configurations for a vehicle [[mower]]. The generator is mechanically driven by the output shaft of an internal combustion engine to generate the electrical power for energizing the electric motors. A central computer in the electronic control module controls the output voltage of the generator and the speed and torque of each of the motors in the drive system. The speed input signal for the motors can be analog signals that come from sources such as a joystick, a potentiometer mounted on a steering wheel, control panel, foot pedal or remote location or digital signals from a digital device. Position/speed detectors on each motor and the generator send signals back to the central computer for closed-loop control of the generator and of the motors. The generator supplies the DC voltage to the power control board for each motor as commanded by the central computer. The rotor of each motor is connected to a gearbox for speed reduction and increased torque that is applied to the wheel mounted on the output shaft of the gearbox. When the motors are not being driven, the generator may optionally supply DC power to the input of an inverter that has an output to standard electric utility AC outlets that can be used to power auxiliary equipment.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-2 (canceled).

Claim 3 (currently amended): The drive system of claim 12 [[1]], further comprising: a second motor mechanically connected to a second wheel and electrically connected to the generator such that the second motor drives the rotation of the second wheel, the second motor including a second motor rotor and a second motor encoder placed to monitor the second motor rotor, wherein the second motor is a high-efficiency switched reluctance electric motor or a brush-less DC motor.

Claim 4 (canceled).

Claim 5 (currently amended): The drive system of claim 12 [[1]], wherein the internal combustion engine is run continually at the speed where it operates at maximum torque.

Claim 6 (currently amended): The drive system of claim 12 [[1]], wherein during braking of the first wheel the first motor will regenerate energy back through the first motor to apply a braking force against the internal combustion engine.

Claims 7-10 (canceled).

Claim 11 (currently amended): The drive system of claim 12 [[1]], wherein the central computer is adapted to control the generator output by controlling electrical excitation of the generator through the [[generator]] control circuit.

Claim 12 (currently amended): A drive system for a vehicle ~~The drive circuit of claim 10~~, comprising:

a first wheel for propelling the vehicle;

a first motor mechanically connected to the first wheel such that the first motor drives the rotation of the wheel, the first motor including a first motor rotor and a first motor encoder placed to monitor the first motor rotor, wherein the first motor is a high-efficiency switched reluctance electric motor or a brush-less DC motor;

a generator electrically connected to the first motor such that the generator converts mechanical power into electrical power and supplies this electrical power to the first motor;

an internal combustion engine mechanically connected to the generator such that the internal combustion engine supplies mechanical power to the generator; and

a power control module electrically connected to the generator and the first motor, the power control module including a central computer and a control circuit, wherein the central computer is adapted to control the speed and direction of the first motor through the control circuit, and to control the generator output level to the first motor based on the first motor power requirements ~~the generator including a generator rotor and a generator encoder placed to monitor the position of the generator rotor, wherein the generator encoder is adapted to send a generator~~

~~signal to the power control module such that the power control module is operable to determine a level of excitation required in order to maintain the correct output level of the generator~~.

Claim 13 (currently amended): The drive system ~~circuit~~ of claim 11 [[10]], further comprising:

a speed set point signal representing a desired generator speed;

a generator speed signal representing the actual speed of the generator;

a resultant generator error signal representing the difference between the speed set point signal and the generator speed signal; and

a generator control signal;

wherein the central computer is adapted to subtract the generator speed signal from the speed set point signal to form the resultant generator error signal; and

wherein the central computer is further adapted to process the resultant generator error signal to create the generator control signal which is sent to the control ~~generator~~ circuit to control electrical excitation of the generator and the speed of the generator and internal combustion engine.

Claims 14-15 (canceled).

Claim 16 (currently amended): The drive system of claim 12 [[14]] , further comprising:

a speed set point signal;

a motor speed signal;

a resultant motor error signal; and

a motor control signal;

wherein the central computer is adapted to subtract the motor speed signal from the speed set point signal to form the resultant motor error signal; and

wherein the central computer is further adapted to process the resultant motor error signal to create the motor control signal which is sent to the motor circuit to control the speed ~~excitation~~ of the first motor.

Claim 17 (currently amended): The drive system of claim 12 [[14]], further comprising:

a speed set point signal, wherein the central computer is adapted to determine and compare the speed of the motor to the speed set point signal to determine if a speed correction is required to increase or decrease the power output level to that motor.

Claim 18 (previously presented): The drive system of claim 17, wherein the central computer is adapted to control acceleration of the motor through increases in the speed set point signal.

Claim 19 (currently amended): The drive system of claim 12 [[14]], further comprising:

a current set point signal, wherein the central computer is adapted to determine and compare the current to [[of]] the motor to the current set point signal to determine if a current correction is required to increase or decrease the power signal to the motor.

Claim 20 (currently amended): The drive system of claim 39 [[14]], the power control module further including[[:]] a first operator input device and a second operator input device, the first operator input device generating a first operator input signal for average speed and direction and the second operator input device generating a second operator input signal for the specific speeds of the first and second motors, wherein the central computer is adapted to control the speed and direction of the first and second motors through the control circuit based on the first and second operator input signals

~~a generator encoder adapted to provide a generator signal; and~~

~~a motor encoder adapted to provide a motor signal;~~

~~wherein the central computer is adapted to accept control signals from a steering input device; and~~

~~wherein the central computer is further adapted to control commutation of phase excitation in a generator stator winding and a motor stator winding through the generator signal and the motor signal~~.

Claims 21-22 (canceled).

Claim 23 (currently amended): The drive system of claim 12 [[1]], further comprising:

an inverter module connected to the generator to provide external auxiliary power output.

Claim 24 (original): The drive system of claim 23, the inverter module including:

a semiconductor H-bridge for chopping the output of the generator; and

a low-pass filter for filtering the chopped generator output to provide an alternating current signal.

Claim 25 (currently amended): The drive system of claim 24, wherein the alternating current signal includes two [[to]] components characterized as synchronous 110/120 VAC, 50/60 Hz sinewave inverter outputs that are 180 degrees out of phase.

Claim 26 (original): The drive system of claim 25, wherein the outputs are combined to provide a 240V AC output.

Claim 27 (previously presented): The drive system of claim 23, wherein the external auxiliary power output from the inverter is not provided when the mower is moving.

Claim 28 (withdrawn): A control method for a drive system utilizing a first motor with a first motor current, a first motor speed, and a first motor speed control signal and a second motor with a second motor current, a second motor speed, and a second motor speed control signal, wherein the control method is used to electrically simulate the characteristics of a mechanical differential, comprising:

detecting a drop in motor current associated with a loss of traction;

matching the first motor current into the first motor with a second motor current into the second motor;

repeating the matching until the first current and the second current are substantially equal.

aligning the average speed of the first motor and the second motor with a speed set point;

repeating the aligning until the two speeds are substantially equal

measuring the current into the fastest motor.

measuring the current into the slowest motor

comparing the currents of the fastest motor and the slowest motor;

returning to the matching step if the fastest motor current is lower than the slowest motor current;

adjusting the motor speed, incrementing the current to the slowest motor, and returning to aligning only if the fastest motor current is higher than the slowest motor current.

Claim 29 (withdrawn): The control method of claim 28, wherein matching includes:

measuring the first current into the first motor;

measuring the second current into the second motor;

comparing the first current and the second current and marking one of the motor currents as a higher current motor and the other motor current as a lower current motor;

decrementing the current of the higher current signal when the currents are not equal;

incrementing the speed of the lower current motor and equally decrementing the speed of the higher current motor;

Claim 30 (withdrawn): The control method of claim 28, wherein aligning includes:

measuring the speed of the first motor;

measuring the speed of the second motor;

averaging the speeds of the two motors to create an average speed;

comparing the average speed to the speed set point;

matching the currents if the average speed is not equal to the speed set-point.

Claim 31 (withdrawn): A control method for a positive traction drive system utilizing a first motor with a first motor speed, and a second motor with a second motor speed, comprising:

measuring the speed of the first motor and the second motor, and

equalizing the speed of the two motors regardless of the loss of traction by either wheel.

Claim 32 (withdrawn): The control method of claim 31, further comprising:

detecting speeds greater than a given speed set-point; and

disabling the control method when the speeds are greater than the set point.

Claim 33 (withdrawn): A control method for a positive traction drive system utilizing a first motor with a first motor speed, and a second motor with a second motor speed, comprising:

measuring the speed of the first motor and the second motor within an allowable difference, and

equalizing the speed of the two motors to be within the allowable difference.

Claim 34 (withdrawn): The control method of claim 33, further comprising:

varying the allowable difference as the speed is changed.

Claim 35 (withdrawn): A mower comprising:

a first wheel;

a first motor drivingly connected to the first wheel;

a generator adapted to convert mechanical energy into electrical energy, the generator electrically connected to supply electrical power to the first motor;

a fuel engine operatively connected to the generator adapted to provide mechanical energy to the generator.

Claim 36 (withdrawn): The mower of claim 35, further comprising:

a power inverter electrically connected to the generator, the power inverter adapted to convert electrical energy from the generator into standard household electrical power.

Claim 37 (withdrawn): The mower of claim 35, wherein the mower is a lawn tractor.

Claim 38 (withdrawn): The mower of claim 35, further comprising:

a second wheel rotationally attached to the frame;

a second motor drivingly connected to the second wheel; and

the generator electrically connected to supply electrical power to the second motor.

Claim 39 (new): The drive system of claim 3, wherein the central computer is further adapted to control the speed and direction of the second motor through the control circuit, and to control the generator output level to the second motor based on the second motor power requirements.

REMARKS

The present Amendment is submitted together with a Request for Continued Examination. The Official Action dated March 18, 2003, has been carefully considered. Accordingly, the changes presented herewith, taken with the following remarks, are believed sufficient to place the present application in condition for allowance. Reconsideration is respectfully requested.

By the present amendment, the specification and abstract have been corrected to clarify that the invention relates to an electric generator and motor drive system for multipurpose lightweight vehicles. Support for the amendments is found in the specification at page 1, line 19, through page 3, line 18, and at page 18, line 19, through page 20, line 16. Care has been exercised to avoid any introduction of new matter. A version showing changes made is attached hereto.

In the Official Action dated March 18, 2003, the Examiner indicated that claims 12, 13, 15-20 and 24-26 would be allowable if rewritten in independent form. Claim 12 has been amended to stand in independent form, and has been further amended to incorporate elements of claim 15, which has been canceled. Support for the amendment to claim 12 is found in claim 15 and in the specification at page 4, lines 7 through 13, at page 5, lines 3 through 20, at page 6, lines 9 through 16, and at page 14, line 15, through page 15, line 6. A version showing changes made is attached hereto. It is believed that these changes do not involve any introduction of new matter, whereby entry of the amended claim 12 is believed to be in order and is respectfully requested.

Claims 16, 17, and 19 have been amended to depend upon claim 12. As claim 12 has been amended in independent form, Applicants submit that claims 16, 17 and 19 are allowable as

amended. It is believed that these changes do not involve any introduction of new matter, whereby entry of the amended claims is believed to be in order and is respectfully requested.

Claims 3, 5, 6, 11 and 23 similarly have been amended to depend upon claim 12. As claim 12 is now presented in independent form, Applicants submit that claims 3, 5, 6, 11 and 23 are allowable. Claim 3 also has been amended to add a second motor rotor and second motor encoder as elements of the claim. Support for this amendment to claim 3 is found in the specification at page 6, lines 9 through 16, at page 8, lines 20 through 22, and at page 12, line 12, through page 13, line 5. It is believed that these changes also do not involve any introduction of new matter, whereby entry of the amended claims is believed to be in order and is respectfully requested.

Claim 13 has been amended to depend upon claim 11, which has been amended to depend upon claim 12 in independent form. Claim 13 also has been amended to clarify what the generator control signal controls. Support for this amendment to claim 13 is found in the specification at page 13, lines 8 through 18, and page 15, lines 13 through 16. It is believed that these changes do not involve any introduction of new matter, whereby entry of the amended claim 13 is believed to be in order and is respectfully requested.

As claims 17 and 23 are now presented as dependant upon claim 12 in allowable form, Applicants submit that claims 18, 24, 25, 26 and 27 are prima facie allowable. Claim 25 also has been amended to correct a typographical error. No new matter has been introduced. Reconsideration is respectfully requested.

New claim 39 has been added, providing for control of the second motor by the central computer. Claim 39 depends upon claim 3, which as noted above has been amended to depend upon claim 12 in independent form. Support for claim 39 is found in the specification at page 6,

lines 9 through 16, at page 8, lines 20 through 22, and at page 12, line 12, through page 13, line 5. It is believed that this claim does not involve any introduction of new matter, whereby entry of claim 39 is believed to be in order and is respectfully requested.

Claim 20 has been amended to depend upon claim 39, and Applicants thus submit that claim 20 also is allowable. Applicants believe that this amendment does not involve the introduction of any new matter, whereby entry of the amended claim 20 is believed to be in order and is respectfully requested.

Claims 1, 3, 6, 7, 21 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura (U.S. Patent No. 4,951,769) in view of Benson (U.S. Patent No. 6,109,009). This rejection is traversed. Claims 1, 7 and 21 are being canceled to expedite prosecution. Claims 3, 6, and 23 are amended by present amendment to be dependent on claim 12, which has been amended to stand in independent form. These amendments traverse the rejection with regard to claims 3, 6 and 23, and reconsideration is respectfully requested.

Claims 5, 8, 9, 22 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura and Benson in further view of Deguchi et al. (U.S. Patent No. 6,278,915). This rejection is traversed. Claims 8, 9, and 22 are being canceled to expedite prosecution. As discussed above, claim 5 is amended to depend on claim 12, which has been amended to stand in independent form. Claim 27 is dependent on claim 23, which also has been amended to depend on claim 12. These amendments traverse the rejection with regard to claims 5 and 27, and reconsideration is respectfully requested.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura and Benson in further view of Arimitsu (U.S. Patent No. 6,376,955). This rejection also is traversed, as claim 4 is being canceled to expedite prosecution.

Claims 10, 11 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura and Benson in further view of Krohling et al. (U.S. Patent No. 4,992,920). This rejection is traversed. Claims 10 and 14 are being canceled to expedite prosecution. As discussed above, claim 11 is amended to depend on claim 12, which has been amended to stand in independent form. This amendment traverses the rejection with regard to claim 11, and reconsideration is respectfully requested.

It is believed that the above represents a complete response to the rejections under 35 U.S.C. § 103(a), and places the present application in condition for allowance. Reconsideration and an early allowance are requested.

Respectfully submitted,

W. Edward Ramage, Reg. No. 50,810
DINSMORE & SHOHL LLP
414 Union Street, Suite 1100
Nashville, Tennessee 37219
(615) 313-3338